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Since returning from the Persian Gulf War (PGW) veterans and/or their wives have reported burning after contact with their semen. This has been called Burning Semen Syndrome (BSS). These reactions bear striking resemblance to reactions experienced by women with localized vaginal seminal plasma hypersensitivity. This project is attempting: 1) to identify PGW couples experiencing BSS; 2) to determine whether these symptoms represent an immunologic, infectious and/or toxicologic etiology; and 3) to determine if there is a causal relationship between BSS and PGW exposures. Screening questionnaires. designed to elicit demographic information, nature of symptoms, Gulf War exposure history and information on post-traumatic stress disorder (PTSD), were distributed to PGW veterans with BSS symptoms. PGW veterans were primarily identified by local and regional Gulf War screening physicians and through a BSS web page on the Internet. There were 46 male respondents. 41 of 46 respondents had sexual partners with vaginal burning after semen contact whereas 15 males experienced burning after contact with their own semen. There was no correlation between BSS and PTSD. Five PGW veterans and their sexual partners had a more extensive evaluation including CBC, differential, chemistries, liver function tests, ANA, sedimentation rate, vaginal/cervical or seminal plasma cultures, skin testing to seasonal and perennial aeroallergens and whole seminal plasma, and specific IgG, IgA and IgE antibodies to seminal plasma proteins by ELISA. Four males and two females were atopic. None elicited a positive skin test or specific antibodies to seminal plasma proteins. Three women grew ureaplasma urealyticum from their cervical cultures, one grew streptococcus Group B, and one Candida. Two women had positive ANA titers (≥ 1:80 titer) and one had an increased sedimentation rate of 65 sec. Larger numbers of PGW veterans and their sexual partners with BSS are currently being evaluated to differentiate between immunologic and infectious etiologies.

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Year 1 Progress Report: Department of the Army Gulf War Illnesses Research Proposal AIBS #GWI 0046, "Investigation of Seminal Plasma Hypersensitivity Reactions" Contract # DAMD17-96-C-6107.

Table of Contents:

I. Introduction:

Persian Gulf War (PGW)Veterans and/or their sexual partners have been experiencing burning, pain and swelling of the urogenital tract after exposure to semen since returning from the Persian Gulf. This phenomenon has been referred to as "Burning Semen Syndrome" (BSS). The primary objective of this research project is to identify and evaluate PGW veterans and their sexual partners with BSS. The secondary objective of this proposal is to determine if the underlying mechanism(s) of BSS is immunologic, infectious and/or toxicologic in nature. The third objective is to determine if the onset of BSS is related to chemical and/or biologic exposures encountered by PGW veterans during their tour of duty in the Persian Gulf. The fourth and final objective is to identify potential treatment(s) for BSS.

Seminal plasma protein reactions in civilian populations of women have been previously well described.[1-4] Women who experience postcoital anaphylaxis have been demonstrated to produce specific IgE antibodies to seminal plasma proteins.[2] These women have been successfully desensitized using homologous relevant seminal plasma protein antigens obtained from their sexual partner.[2-4] Subsequently, women experiencing localized vaginal inflammation, characterized by burning and pain and occurring immediately after contact with their sexual partner's semen, were also successfully treated with seminal plasma protein desensitization. This suggested that some postcoital localized vaginal reactions may be IgE-mediated.[1] A recent questionnaire survey distributed to 1,073 women who suspected they might have symptoms consistent with localized or systemic seminal plasma protein hypersensitivity revealed that 12% fulfilled the diagnostic criteria. This survey indicates that seminal plasma hypersensitivity reactions are more common than previously reported. The initial hypothesis of this project postulated that BSS occurred secondary to specific IgE antibody responses to one or more seminal plasma proteins. This hypothesis was based on observations that some women who were diagnosed and successfully treated for localized vaginal seminal plasma hypersensitivity, experienced similar reactions.[1] Therefore, our clinical experience investigating seminal plasma hypersensitivity in civilian female populations provided a foundation for the current investigation of PGW veterans and their sexual partners with BSS.

The first year activities focused on identifying the scope of this problem. This has required establishing contacts with: 1) PGW veterans with and without BSS; 2) Gulf War screening physicians at local and remote Veterans Administration Hospitals; 3) veterans organizations such as the American Legion, AmVets, and Veterans of Foreign Wars and; 4) other advocates of PGW veterans. A significant amount of time was devoted to publicizing this project to the news media in order to inform the general public and PGW veterans about BSS. Several magazines (ie. Men's Health, Science News, Playboy...) and newspapers published reports on BSS. Major radio and television news wires (i.e. Reuters, NBC) aired stories regarding BSS. This media exposure has successfully heightening the public's awareness of BSS and our investigation of this problem in PGW veterans. Many PGW veterans with symptoms suggestive of BSS subsequently expressed interest in participating in this project.

II. Body:

A. Experimental Methods/Procedures

Questionnaires:

A web page was established on the internet to identify PGW veterans deployed to the Persian Gulf with and without BSS (see Appendix 1). The web page includes two questionnaires (see Appendix 2) to be completed by the PGW veteran and his sexual partner. These questionnaires can then be transmitted back to our site by E-mail. Questionnaires #1 and #2 were also mailed to the 120 PGW veterans who were previously screened at the Cincinnati VAH Gulf War clinic for general health problems. All individuals who responded to the screening questionnaires were sent more detailed questionnaires to further elucidate details about their symptoms (see Appendix 3). Separate questionnaires were designed for the male and female. This questionnaire packet also included detailed and included screening surveys for post-traumatic stress disorder (PTSD). These questionnaires have been adapted and modified from other questionnaires which have previously been used to evaluate women with seminal plasma protein hypersensitivity reactions.

Clinical Evaluation of PGW veterans:

Persian Gulf War veterans and their sexual partners consenting to participate in this project are required to undergo screening blood tests and cultures to exclude bacterial, fungal and viral infections or other medical disorders (ie. diabetes mellitus, chronic yeast infections, prostatitis...) which could be causing or contributing to their symptoms (see Appendix 4). All PGW veterans and their sexual partners are skin tested using the "prick" method to assess their allergic status. Skin testing is performed to box elder (tree), fescue (grass), short ragweed, *Alternaria* (outdoor mold), *Mucor* (indoor mold), cat, and dust mite in addition to a positive histamine and negative saline control. A fresh ejaculate is collected from each male at the time of the initial evaluation. A small portion of the ejaculate is used for prick skin testing of the male and female in order to determine if either elicits a hypersensitivity reaction. The remaining portion of the sample is sent for semen cultures outlined in Appendix 4. All females undergo a pelvic examination which includes a pap smear, vaginal and/or cervical cultures as outlined in Appendix 4. Finally, serum is obtained from both the male and female to screen for specific IgG, IgA and IgE antibodies to seminal plasma proteins by ELISA.

Direct Competitive ELISA:

IgG, IgA and IgE ELISA is performed using whole seminal plasma obtained from the PGW male subject and asymptomatic civilian male controls. A Costar flat-bottom, 96-well polystyrene plate (Corning) is coated with 100 µl of seminal plasma protein previously diluted to concentration of 10 µg/ml with 0.15 mol/L NaCl. The plate is incubated for two hours at room temperature with 0.15 mol/L tween-phosphate buffer saline to block for unreacted sites. Both the PGW veteran and their sexual partner's serum is diluted 1:5 and added in triplicate to the microtiter wells. The plate is allowed to incubate for 24 hours at room temperature. For IgG and IgA antibody detection, alkaline phosphatase conjugated goat anti-human IgG and IgA (Sigma)

respectively, are diluted 1:2000 and added to each well. After the plate incubates for one hour at room temperature, 100 µl of 1 mg/ml p-nitrophenyl phosphate substrate is added to each well. The enzyme reaction is allowed to proceed for 30 minutes and then stopped with KOH. The optical density of each well is measured using a microplate ELISA reader at 405 nm. For IgE antibody detection, goat anti-human IgE (Kirkegard and Perry) diluted 1:1000 is added is each well and incubated for one hour at room temperature. The plate is then washed and alkaline-phosphatase labeled rabbit anti-goat IgG diluted to 1:2000 is added to each well. After the plate incubates for one hour at room temperature, the optical density is determined as described for IgG and IgA isotype specific antibodies.

Bacteriological Studies:

Based on our preliminary data (see Results section), we have initiated studies to assess the antibacterial status of whole seminal plasma from PGW veterans. Well characterized strains of *Escherichia coli* and *Streptococcus pyogenes* Group B, were grown in Fair minimal growth medium which supports growth of organisms at 100-fold lower levels than tryptic soy broth.[5] Cultures were grown to a maximum level of approximately 10^8 colony-forming units/ml for E. coli and 10^7 colony-forming units/ml for group B streptococcus. Zinc at a concentration of 100 µg/ml is used as a bacteriostatic control because of its known role as a prostatic antibacterial factor. Zinc at this concentration inhibits E. coli 200-fold or greater and group B streptococcus at least 30-fold. Whole seminal plasma from PGW veterans diluted 1:10 in Fair medium is added to the E. coli and Group B streptococcus cultures and colony-forming units are counted.

Polymerase Chain Reaction for *Ureaplasma urealyticum*:

Based on preliminary findings (see Results section), a PCR technique is being developed to identify the presence of *Ureaplasma urealyticum* DNA in the whole seminal plasma of PGW veterans. Two primers for the urease gene of *Ureaplasma urealyticum* have been obtained from a commercial oligo-preparation company and are the same as published by Krieger, et.al.[6] A probe for the urease gene has been prepared with a 5' biotin label. *Ureaplasma urealyticum* organisms were obtained from Dr. George Kenny at the University of Washington in Seattle, WA as a positive control source of DNA. Southern blotting is being performed using the biotin-labeled probe to detect the presence of *Ureaplasma urealyticum* DNA in the seminal plasma from PGW veterans whose sexual partner grew out this organism in their cervical culture. It is necessary to resort to a more sensitive method to identify the presence of *Ureaplasma urealyticum* in PGW veterans' seminal plasma as this organism could not be isolated from culture using special growth media. The presence of this specific probe will be determined by chemiluminescence using the Photo-Gene kit from Life Technologies.

B. Results

Questionnaires:

Responses to template screening questionnaires #1 and #2 from PGW veteran's and/or their sexual partners are summarized in Appendix 2. Table I summarizes demographic data of PGW veterans who returned either questionnaires #1, #2 and/or the more detailed questionnaire #3. It is evident from Table I that the percentage of respondents completing and returning questionnaires dramatically decreased as the questionnaires became more detailed or addressed sensitive issues such as PTSD (19.5% completion rate). In one instance, a PGW veteran and his wife refused to further participate in the study because they were offended by questions contained in the PTSD screening questionnaire packet (Appendix 2). All of the questionnaire respondents to this point have been male PGW veterans. The average age of the males and their female sexual partners was 35 and 32 years old, respectively. The geographic distribution of PGW respondents around the United States is illustrated in Figure 1. The greatest number of PGW veterans with BSS were located in Ohio which most likely reflects more aggressive local media coverage of this problem and greater cooperation with local and regional VAH Gulf War screening physicians. Many of the subjects were identified through the mailing list and the internet web page.

The initial phase of the study was designed to gather as much information as possible about PGW veterans and their sexual partners experiencing BSS. 42 or 46 respondents completed screening questionnaire #1. The responses to this questionnaire are summarized on a copy of this questionnaire (see Appendix 2). Of these respondents, 41 indicated they did not experience BSS prior to going to the Persian Gulf. 41 indicated that their sexual partner experienced a burning sensation after contact with their semen but only 15 of the PGW veterans experienced burning during or after ejaculation or upon direct contact with their semen. Interestingly, 20 indicated that symptoms abated with use of a condom, 9 continued to have symptoms with a condom and 13 never tried using a condom to prevent symptoms. Only half the respondents had previously sought medical attention for this problem. Nine of the respondents indicated that they had been diagnosed with some type of sexually transmitted disease. The majority of respondents (i.e. 93%) were interested in participating in this study.

Questionnaire #2 is the same questionnaire which has been used to screen civilian populations of women with localized and/or systemic seminal plasma hypersensitivity. This questionnaire has been validated as reliable in detecting women with probable local and/or systemic seminal plasma hypersensitivity reactions.[3] This questionnaire was completed by the sexual partner of 26 PGW veterans. The responses are summarized on a template of questionnaire #2 (see Appendix 2). Many of the respondents complained of systemic symptoms associated with burning and other localized symptoms. One-third of the respondents indicated that their symptoms disappeared with the use of a condom whereas 1/3 indicated that their symptoms persisted and 1/3 never tried using a condom.

Finally, questionnaire #3 was designed to obtain more detailed information regarding the PGW veteran and his sexual partner. The response rate to this questionnaire was lower than the previous two questionnaires. These questionnaire responses are summarized in table II.

A pilot study was completed during year 1 of this project to test the questionnaires and ensure that the evaluation of the PGW couples was well coordinated. The pilot study included

interviews and evaluations of five PGW veterans and their sexual partners with BSS at the Cincinnati Veterans Administration Hospital. One additional PGW veteran was evaluated but his wife refused to participate. The interview included answering the above questionnaires, completing a PTSD questionnaire packet, obtaining blood samples from both the male and female to exclude underlying concomitant disorders such as sexually transmitted diseases (see Appendix IV), a pap smear with vaginal/cervical cultures of the female and a fresh semen ejaculate for skin testing and cultures from the male.

The Mississippi Post-Traumatic Stress Disorder (MPTSD) and Combat Exposure Scale (CES) questionnaires were used to screen for PTSD. Table III summarizes the results of all PTSD questionnaires returned thus far by PGW veterans. Of the PGW veterans evaluated at the Cincinnati VAH, three were considered negative for PTSD, two were possible for PTSD and one was probable for PTSD.

Clinical Evaluation of PGW Couples with BSS:

Both males and females were prick skin tested to common seasonal and perennial allergens to determine their atopic status and to the male's whole semen. Four out of the six PGW veterans had evidence of atopy defined as a skin reaction eliciting ≥ 3 mm wheal with erythema to one or more allergens. Four of six PGW veterans and two of five female sexual partners elicited at least one positive skin test reaction to an aeroallergen. None of the PGW veterans or their sexual partners exhibited a significant prick skin test reaction to the male's whole semen. The lack of specific *in vivo* antibody responses to seminal plasma proteins was confirmed by *in vitro* ELISA designed to measure specific IgG, IgA and IgE antibodies to seminal plasma proteins. Specific antibodies could not be detected in any of the PGW veterans or their sexual partners.

Pertinent positive results of screening laboratory tests for the PGW male and his sexual partner are summarized in Table IV. Three of five women evaluated grew *Ureaplasma urealyticum* from their cervical culture. Two of these women also exhibited positive ANA titers and one had an increased sedimentation rate. One woman grew *Streptococcus* Group B from her cervical culture and had a chronic vaginal yeast infection. Both the males and females exhibited varying antibody titers to either HSV, CMV or mycoplasma. There did not appear to be a correlation between symptoms and PTSD in the small number of subjects evaluated thus far.

The results of the initial pilot study have indicated several things: 1) the operational procedures for initial screening interviews and laboratory evaluations of the PGW veterans and their sexual partners went smoothly and therefore was successful; 2) the questionnaire responses regarding BSS by the PGW veterans and their sexual partners was variable and their response rate seem to proportionately decrease as the questionnaires became more detailed; 3) there was an even poorer completion rate of the PTSD questionnaire packets; 4) none of the six PGW veterans or their sexual partners elicited positive skin test responses to their semen nor did they produce measurable levels of specific IgG, IgA and IgE antibodies to seminal plasma proteins in their sera; 5) three of the five women evaluated grew *Ureaplasma urealyticum* in their cervical cultures, two had positive ANA titers and one had a high sedimentation rate; and 6) there did not seem to be a correlation between BSS and PTSD among the participants in this pilot study.

Finally, a preliminary abstract was presented at the Society of Toxicology meeting held in Cincinnati, March 1997, pertaining to BSS in PGW veterans and a second abstract has recently been submitted the American Academy of Allergy, Asthma and Clinical Immunology.[7,8]

III. Conclusions:

Overall, there has been a significant response from PGW veterans complaining of BSS and the total number of respondents has increased since the preparation of this report. Questionnaire responses have uniformly indicated that BSS began after the PGW veterans returned from the Persian Gulf. The female sexual partner is experiencing the burning sensation in the majority of cases but in a number of situations the male PGW veteran also experiences burning after contact with his own semen. Initial assessment of a small group of PGW veterans and their sexual partners indicates that several of the participants have underlying bacterial infections which could be causing or contributing to their symptoms. Some of the subjects exhibit non-specific laboratory abnormalities suggestive of an underlying inflammatory condition which could be consistent with a chronic infection. None of the subjects evaluated thus far exhibited positive skin tests to whole semen or specific IgG, IgA or IgE antibodies to seminal plasma proteins in contrast to what has been reported in women experiencing systemic and/or localized seminal plasma hypersensitivity reactions.

The next phase of this project is to complete evaluation of a larger number of PGW couples (N=50-60) with BSS symptoms to establish an underlying cause for their symptoms. Preliminary data suggests an infectious etiology. It is unclear if PGW veterans are more prone to infections than PGW veterans not deployed to the Persian Gulf or the civilian population. None of the women with documented vaginal infections have thus far been empirically treated for their infection(s) to determine if their symptoms are attenuated or disappear. However, we are planning to treat those men and women with proven infections with appropriate antibiotics to determine if their symptoms improve.

In order to expedite evaluation of this PGW population, it has become evident that a Project Coordinator be employed to act as a liaison between the Principal Investigator and the PGW veterans who wish to participate in this project. This individual will arrange the evaluation of the PGW veterans and their sexual partners either at the Cincinnati VAH or at their regional VAH. This takes a significant amount of time to coordinate. Based on our initial experience, it has been very difficult to identify physicians willing to assist in these evaluations. This individual will also maintain frequent contact with participating PGW couples to update them on the progress of their evaluation and the overall investigation in addition to ensure that questionnaires, laboratory testing and biologic specimens are received in a timely fashion. The project coordinator will also assist in making arrangements for all local evaluations of PGW couples at the Cincinnati VAH. Finally, this individual will maintain and update the data base on a regular basis.

An essential part of this project is to identify and evaluate cohort control populations for comparison with the deployed PGW symptomatic veterans for BSS (i.e. PGW veterans deployed to Persian Gulf without BSS symptoms and PGW veterans not deployed to the Persian Gulf with or without symptoms). This will involve recruiting subjects from nearby military installations (i.e. Wright Patterson Air Force Base in Dayton and local and regional national guard installations). All subjects (PGW couples with BSS and control groups) will be asked to complete questionnaires #1-3, PTSD packets and clinical testing performed on the pilot study participants.

Currently, methods are being developed in the laboratory to detect *Ureaplasma*

urealyticum DNA by PCR analysis in the semen of PGW veterans with BSS.[6,9] This organism is related to the mycoplasma family of organisms and is often difficult to grow in culture. This might be one explanation why none of the male semen cultures grew out *Ureaplasma urealyticum*. Another explanation is that semen is rich in bacteriostatic and enzymatic proteins which may inhibit growth of organisms in culture thereby making DNA determination the only practical way of detecting the presence of a specific organism.[6,9] All future participants will continue to be screened for IgG, IgE and IgA specific antibodies to seminal plasma proteins to exclude an immunologic etiology for BSS.

The most difficult task of this project will be to determine whether or not the onset of BSS is related to exposures by PGW veterans while they were deployed to the Persian Gulf. Exposure data are being obtained on an ongoing basis from the data base of the Deployment Environmental Exposure Program at the Center for Health Promotion and Preventive Medicine using PGW veterans social security numbers and unit identification codes.

All of the previous and future PGW couples evaluated who have been found to have evidence of an active infection will be offered appropriate therapy as a therapeutic/diagnostic means for establishing a linkage with BSS.

To accomplish these tasks the original budget has been reconfigured to hire a Project administrative coordinator, two research assistants to process all biologic specimens, perform all specific antibody immunoassays and conduct other specific experiments directed at finding an underlying cause for BSS. Funds are also necessary to pay for the PGW veteran's sexual partner's clinical and laboratory evaluations and control population assessments. All initial evaluations of the PGW veterans with BSS are considered part of their screening evaluation for problems arising since returning from the Persian Gulf and are being paid for by the Veterans Administration Hospital. Funds are also necessary to pay for all expenses incurred by the PGW veteran during their evaluations (i.e. travel, lodging, meals, postage, missed days from work). Restructuring this project in this manner will facilitate the evaluation of larger numbers of subjects and improve the liklihood that an underlying etiology for BSS will be identified.

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TABLE I

SUMMARY DEMOGRAPHIC DATA FOR FIRST YEAR REPORT
(Burning Semen Syndrome Study)

Number of Respondents to Questionnaires 1 &/or 2:			46	
Number excluded from study to date			3	
(pre-existing symptoms; AIDS; didn't want to participate)				
Total Number of Subjects to date:			43	
Persian Gulf War Veteran Gender:				
	Male	43		
	Female	0		
Number reporting no partner			7	
Average Age Males			35	
Age Range Males	26 to 50			
Average Age Female Partners			32	
Age Range Females	19 to 57			
Number completing Questionnaire # 1			42	91.0%
Number completing Questionnaire # 2			26	62.0%
Number completing Questionnaire # 3 for Males			18	39.0%
Number completing Questionnaire # 3 for Females			14	30.0%
Number compelting PTSD Inventory			9	19.6%

The 43 respondents are from the following States:

1 Alabama	3 New Hampshire
1 Arkansas	1 New Mexico
1 California	1 New York
1 Colorado	14 Ohio
1 Florida	3 Oklahoma
1 Hawaii	1 Pennsylvania
1 Idaho	3 Texas
3 Kentucky	1 Virginia
1 Maryland	1 Washington
1 Montana	1 West Virginia
2 North Carolina	

Table II: Summary of Questionnaire #3 Responses (N=18 Male; 14 Female)

Question	Response
Average age (Males)	37 years old
Average age (Females)	33 years old
Period stationed in Persian Gulf	8/90-5/91 (represents range of time)
Average length of tour	5.3 months
Location while in Persian Gulf	Iraq, Kuwait and Saudi Arabia (one stayed in United States-Myrtle Beach, S.C.)
Reported chemical exposures	Diesel fumes, oil fire fumes, petrochemicals and pesticides
Average length of exposure	5.1 months
Diagnosis of Leishmaniasis	Yes (N=2); No (N=11);Unknown (N=5)
Treatment for Leishmaniasis	None (N=2)
Uranium exposure	Yes (N=6); No (N=7); Not completed (N=5)
Exposure to Biological agents	Yes (N=12); No (N=4); Unknown (N=2)
Ingestion of Pyridostigmine Bromide	Yes (N=14); No (N=3); Not completed (N=1)
Side effects from Pyridostigmine Bromide	Yes (N=4); No (N=5); Unknown (N=3); Not completed (N=6)
Exposure to Pesticides	Yes (N=9); No (N=2); Unknown (N=5); Not completed (N=1)
Received Vaccinations	Yes (N=14); No (N=1); Unknown (N=2); Not completed (N=1)
Diagnosis of Post-traumatic Stress Disorder	Yes (N=10); No (N=7); Unknown (N=1)
Treatment of Post-traumatic Stress Disorder	Yes (N=7); No (No=9); Not completed (N=2)
State of Health prior to PGW	Good to Excellent (N=18)
Current State of Health	Poor (N=6); Good to Great (4); Multiple symptoms (N=7); Not completed (N=1)
Sexually transmitted disease	Male: Yes (N=1 post PGW); No (N=17) Female: Yes (N=3 post PGW); No (N=11)
Reaction to Semen (All reactions began after PGW)	Male: Yes (N=12); No (N=6) Female: Yes (N=14); No (N=0)

Reaction with other partners	Male: Yes (N=0); No (N=18) Female: Yes (N=2); No (N=12)
Onset of reaction with first sexual encounter after returning from PGW	Yes (N=4); No (N=10); Not completed (N=2)
Time of Onset symptoms occur within males	Within minutes (N=9); Within hours (N=2); Not stated (N=7)
Time of Onset symptoms occur within females	Within minutes (N=10); Within hours (N=2); Not stated (N=6)
Length of time symptoms persist in males	Minutes (N=4); Hours (N=2); Days (N=7); Not stated (N=5)
Length of time symptoms persist in females	Minutes (N=2); Hours (N=2); Days (N=7); Not stated (N=7)
Systemic symptoms	Males (N=13); Females (N=7)
Reactions with condom	No (N=6); Yes (N=5); Never used (N=6)
History of vasectomy	Yes (N=2); No (N=16)
History of infertility problems	Yes (N=3); No (N=15)
History of Allergies	Yes (N=4); No (N=14)
Food Allergies	Yes (N=3); No (N=15)
Drug Allergies	Yes (N=3); No (N=15)
Same sexual partner pre/post PGW	Yes (N=13); No (N=5)
Recurrent vaginal yeast infections	Yes (N=9);No (N=5); Female responses only
Use of oral contraceptives	Yes (N=1);No (N=13); Female responses only

Table III

BURNING SEMEM SYNDROME STUDY SUMMARY OF PTSD FINDINGS

FILE NUMBER	MPTSD SCORE	CES SCORE	Neg for PTSD	Possible for PTSD	Probable for PTSD	Questionable PTSD Data
1025	101	18			X	
1030	108	15		X		
1035	112	0				X
1070	81	0				X
1080	67	18	X			
1090	76	5	X			
1135	122	0		X		
1165	75	4	X			
1170	138	14			X	

PTSD SCREENING PACKET

1 Participant Information Form -- contains basic demographic information
2 Physical Symptom Checklist -- asks for information specific to the Gulf War
3 Combat Exposure Scale (CES) -- seeks information regarding frequency of combat action participation and knowledge of combat violence.
4 Impact of Event Scale (IES) -- relates to recent thoughts and feelings about stressful life events which the respondent has experienced.
5 Mississippi PTSD Rating Scale (MPTSD) -- inventory of statements about how one views oneself and experiences life situations.
6 Coping Strategies Inventory (CSI) -- seeks information about how one handles stressful events.
7 Traumatic Events Screen Inventory (TESI) -- asks for specific information about life events one has actually experienced.
8 The Life Experiences Survey (LES) -- also requests information about specific life events one has experienced and how these events affected the individual.
9 Brief Symptom Inventory (BSI) -- asks for information about comfort level with selected problems and complaints.

GENERAL NOTE:

Of the above 9 inventories, only the Mississippi PTSD Rating Scale and the Combat Exposure Scale are being used in this project to make a preliminary assessment of PTSD. The Physical Symptom Checklist, the Impact of Event Scale, and the Coping Stratgies Inventory are also being scored for possible future use.

PARTICIPANT RESPONSE NOTES:

1035 did not complete the Combat Exposure Scale or the last page of the Mississippi PTSD. His Traumatic Events Screen Inventory relates fears of injury or death for self and others and seeing dead bodies. However, his childhood/adolescence is positive for poverty, parental substance abuse and violence, parental death, personal physical, verbal and emotional abuse.

1070 reports no combat exposure but states was under SCUD missle attacks. His Traumatic Events Screen Inventory relates fears of injury or death for self and others as well as seeing dead bodies. He also has child-hood/adolescence poverty with family violence so these responses could be related to early life experiences.

1080 experienced significant compat exposure but, based on these screening tools, appears to be handling the stress well.

1135 possibly has some PTSD symptoms not related to the Gulf War but to other factors from childhood/ adolescence including: parental substance abuse, poverty, physical and emotional abuse.

1165 did not complete the demographic data, the Coping Strategies Inventory, Physical Symptom Checklist, the Impact of Event Scale, and one question on the Combat Exposure Scale.

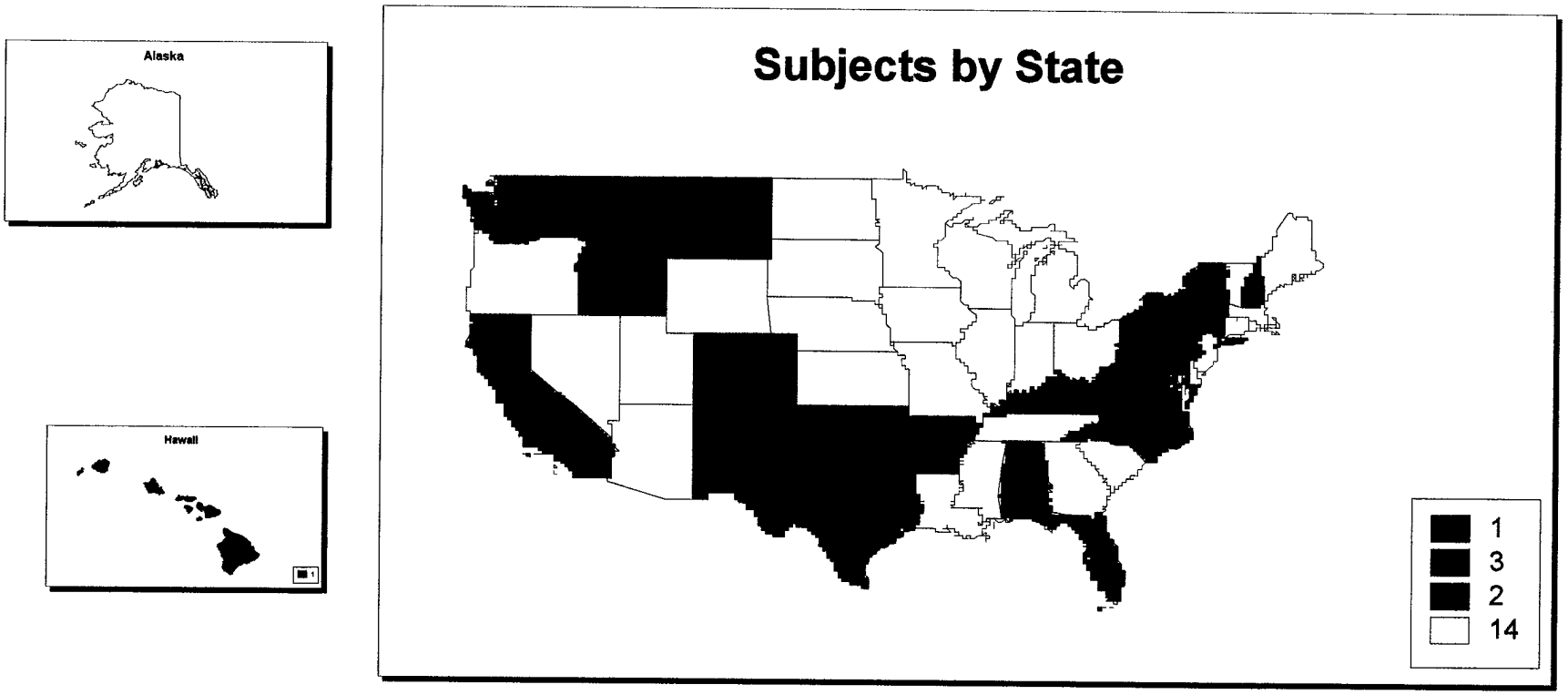
1170 is very likely experiencing some form of post-traumatic stress. However, he also has a childhood/adolescence history positive for severe abuse.

Table IV: Summary of Pertinent Postive Laboratory Results of PGW Veterans and Their Sexual Partners Evaluated in the First Year Pilot Study.

Subject	Laboratory Test Result	Male (PGW Veteran)	Female
1 (-) PTSD	ANA Serum Mycoplasma IgG Ab Serum HSV-1 IgG Ab Serum CMV IgG Ab Cervical Urea.urealyticum	Positive (1:40) Positive	Positive 1:160 speckled Positive Positive Positive Positive
2 poss. PTSD	ANA Serum Mycoplasma IgG Ab Serum HSV-1 IgG Ab Serum CMV IgG Cervical Urea. urealyticum Urine Group B strep.	 Positive Positive Positive	Positive 1:80 Positive Positive Positive Positive Positive (10-50,000 cfu/ml)
3 (-) PTSD	Serum Mycoplasma IgG Ab Serum CMV IgG Ab Cervical pap smear	Positive Positive	 Positive Positive for Candida yeast
4 (-) PTSD	WSR Bands on differential Serum HSV-1 IgG Cervical Urea. urealyticum		68 mm/hr (nl=0-20) 14% (nl=0-6) Positive Positive
5 poss. PTSD	Serum HSV-1 IgG Ab Serum HSV-2 IgG Ab Cervical culture Cervical pap smear	Positive	Positive Positive Moderate Strep Group B Many inflammatory cells
6 (+) PTSD	Serum HSV-1 IgG Ab	Positive	Not available (wife did not participate in evaluation)

Figure 1

BURNING SEMEN SYNDROME STUDY POPULATION



V. Appendices:

I. Web Page
II. Questionnaires #1 and #2
III. Questionnaire #3 and PTSD packet
IV. Laboratory Evaluation tests

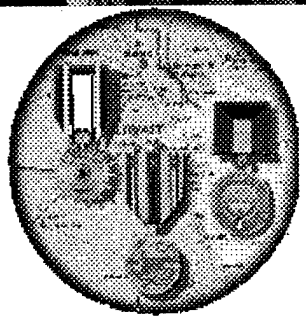
Appendix I

Burning Semen Syndrome

About This Web Site

My CV

Survey



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Appendix II
QUESTIONNAIRE #1

Summary of Responses
(N=42 Respondents)

QUESTIONNAIRE FOR GULF WAR "BURNING SEMEN SYNDROME"

1. Do you experience a burning sensation during or after ejaculation?
   Yes 21 No 20 Not Completed 1

2. Do you experience a burning sensation if you come in contact with your semen?
   Yes 15 No 26 Not Completed 1

3. Does your sexual partner experience a burning sensation of her skin or vagina when she comes in contact with your semen?
   Yes 41 No 1

4. Did this problem exist prior to serving in the Persian Gulf War?
   Yes 0 No 41 Not Completed 1

5. If no, did this problem begin immediately after returning from the Persian Gulf War after the first sexual encounter with your spouse or sexual partner?
   Yes 18 No 20 Not Completed 4

6. Does this burning sensation go away when you use a condom during sexual intercourse?
   Yes 20 No 9 Not Completed 13

7. If you experience this problem, have you sought medical attention?
   Yes 21 No 21

8. Have you been treated for any sexually transmitted diseases since returning from the Gulf War, such as gonorrhea, syphilis, cytomegalovirus, herpes virus, papilloma virus, hepatitis or human immunodeficiency virus?
   9 - Positive Responses to some type of STD.

9. If you and your sexual partner have experienced burning after contact with semen, would you be interested in participating in a study which investigates this problem further?
   Yes 39 No 3

10. If yes, please write your name, age, wife or sexual partner's name and age along with your address, day phone, work phone and FAX if you have one.
    Name _____ Age _____
    Wife or partner's name _____ Age _____
    Address _____
    Phone(day) _____ (work) _____ Fax _____

Thank you for answering this questionnaire. If you have answered yes to these questions, I will be contacting you in the near future with further details about participation in a study investigating burning semen syndrome.

QUESTIONNAIRE #2
Summary of Responses by Females
(N = 26)

NAME: _____

ADDRESS: _____

PHONE: _____

QUESTIONNAIRE ABOUT POSSIBLE ALLERGY TO SEMEN

1. How long have you had the problem? A. _____ months.
   B. 4 year (Average)

2. Do you have the problem exclusively with your current sexual partner? A. 24 YES B. 1 NO Not Completed 1

3. If not, how many times have you experience a reaction with other sexual partners? 1 had symptoms with another partner

4. Did you have the reaction on your first intercourse? (After returning from Persian Gulf)
   A. 12 YES B. 12 NO Not Completed 2

5. If the answer to the above is no, how many years after your first intercourse did the first reaction occur? 2 Reported months; 9 reported 1-2 years; and 1 did not answer.

6. Prior to the first reaction did you have:
   A. 4 a recent pregnancy
   B. 2 recent gynecologic operation
   C. 3 other gynecologic problem

7. How soon after intercourse do your reactions occur?
   A. 22 Minutes B. 1 Hours C. 2 Days Not Completed 1

8. How long after intercourse do your reactions last?
   A. 5 Minutes B. 8 Hours C. 12 Days Not Completed 1

9. Do you have the following symptoms?

Generalized itching	A.	15	YES	11 NO
Hives	B.	7	YES	19 NO
Chest tightness	C.	11	YES	15 NO
Shortness of breath	D.	11	YES	15 NO
Cough	E.	10	YES	16 NO
Wheezing	F.	11	YES	15 NO
Dizziness	G.	12	YES	14 NO
Faintness	H.	8	YES	18 NO
Complete collapse (shock)	I.	2	YES	24 NO
Unconsciousness	J.	2	YES	24 NO

10. If your symptoms are localized only to the vaginal tissue and surrounding areas, do you have symptoms of:

Deep pain	A.	7	YES	19 NO
Burning	B.	20	YES	6 NO
Redness	C.	18	YES	8 NO
Rash	D.	11	YES	15 NO
Blisters	E.	4	YES	22 NO

11. Does the use of condoms prevent the reaction?
A. 9 YES B. 9 NO Not Completed 8

12. How old are you now? Average Age - 32 Years Old

13. How old were you when the reaction first began? 29.7 Yrs. Old

14. Do you have other types of allergies such as asthma, hayfever, hives or eczema? A. 9 YES B. 16 NO Not Completed 1

15. Do you have allergy to foods? A. 4 YES B. 21 NO Not Completed = 1

16. If so, which one(s)? 2 - Pork; 1 - Egg/Milk; 1 - Didn't Specify

17. Do you have allergy to drugs? A. 13 YES B. 13 NO

18. If so, which one(s)? Pen (N=5); Emycin (N=1); Tetracycline (N=1); Sulfa (N=2); Analgesics (N=3); IVP Dye (N=1)

19. Does anyone in your family have a history of hayfever, asthma, eczema or hives? A. 5 YES B. 21 NO

20. Have you been treated for this condition before?
A. 7 YES B. 19 NO

21. If so, what types of treatment have you had? Antihistamines (N=1); Colposcopy/Pap Smear (N=1); Antibiotics (N=1); Anti-fungal (N=2); Inhaler (N=1); Testosterone Injections (N=1).

22. Have you had any prior evaluation about the possible allergic aspects of your problem? A. 4 YES B. 21 NO

23. Have you had vaginitis due to Candida?
A. 8 YES B. 16 NO Not Sure 2

24. Do you wish to be evaluated by our medical group?
A. 21 YES B. 2 NO Not Sure 2 Not Completed 1

25. What is the name and address of the physician who has been treating you most recently for your problem?

NAME: _____

ADDRESS: _____

_____

PHONE: _____

(Q-SP.ltr)

QUESTIONNAIRE FOR POSSIBLE ALLERGY TO SEMEN: FOR MALES

NAME:_____

ADDRESS:_____

PHONE: ( )-_____

WHEN AND WHERE IS THE BEST TIME TO CONTACT YOU DURING THE WEEK?

_____

DATE OF BIRTH:_____ **AGE:**_____

1) WHEN WERE YOU STATIONED IN THE PERSIAN GULF?_____

_____**FOR HOW LONG?**_____

_____

2) WHERE WERE YOU STATIONED WHILE IN THE PERSIAN GULF?_____

_____

3) WHAT WERE YOUR RESPONSIBILITIES OR JOBS WHILE IN THE PERSIAN GULF?_____

_____

4) WERE YOU EXPOSED TO CHEMICAL, DIESEL, PETROLEUM OR OTHER FUMES WHILE IN THE PERSIAN GULF?_____**YES** _____**NO IF SO, WHICH FUMES AND FOR HOW LONG WERE YOU EXPOSED?**_____

_____

5) DID YOU CONTRACT LEISHMANIASIS WHILE IN THE PERSIAN GULF?

_____**YES**_____**NO; IF YES, HOW WAS THIS TREATED AND FOR HOW LONG?**

_____

_____

6) DID YOU HAVE CLOSE CONTACT WITH URANIUM WHILE IN THE PERSIAN GULF?_____YES _____NO; IF YES, WHEN AND FOR HOW LONG?_____

_____

7) WERE YOU IN THE VACINITY OF SCUD MISSILE ATTACKS WHERE YOU MAY HAVE COME IN CONTACT WITH BIOLOGICAL OR CHEMICAL WARFARE AGENTS?_____YES _____NO; IF YES, WHEN AND WHERE WERE YOU EXPOSED?

_____

_____

8) WHILE IN THE PERSIAN GULF DID YOU EVER TAKE PYRIDOSTIGMINE BROMIDE IN ANTICIPATION YOU MIGHT BE EXPOSED TO CHEMICAL WARFARE AGENTS?_____YES _____NO; IF SO, HOW MANY TABLETS DID YOU TAKE OF THIS MEDICATION AND FOR HOW LONG?_____

_____

9) DID YOU EXPERIENCE ANY SIDE EFFECTS FROM THIS MEDICATION? _____YES _____NO; IF SO, WHAT SIDE EFFECTS DID YOU EXPERIENCE AND HOW LONG DID THEY LAST?_____

_____

10) WERE YOU DIRECTLY EXPOSED TO ANY PESTICIDES WHILE IN THE PERSIAN GULF? _____YES _____ NO; IF YES, WHEN AND FOR HOW LONG WAS YOUR EXPOSURE?_____

_____

11) WERE YOU VACCINATED TO ANTHRAX AND BOTULINUM TOXIN PRIOR TO GOING TO THE GULF WAR?_____YES _____NO; WHAT OTHER

VACCINATIONS, IF YES, DID YOU RECEIVE THEM PRIOR TO GOING TO THE GULF WAR?_____

_____

12) HAVE YOU EVER BEEN EVALUATED, DIAGNOSED OR TREATED FOR POST TRAUMATIC STRESS DISORDER (PTSD) SINCE RETURNING FROM THE PERSIAN GULF?_____YES _____NO; IF YES, ARE YOU CURRENTLY RECEIVING PSYCHOTHERAPY AND/OR MEDICATION FOR PTSD?_____YES _____NO; PLEASE LIST ALL MEDICATIONS YOU ARE TAKING FOR PTSD.

_____

13) WHAT WAS YOUR GENERAL STATE OF HEALTH PRIOR TO GOING TO THE GULF WAR?_____

_____

14) WERE YOU INVOLVED IN ANY DECONTAMINATION OPERATIONS AFTER THE WAR?_____YES _____NO; IF YES, PLEASE DESCRIBE YOUR INVOLVEMENT_____

_____

_____

15) DESCRIBE YOUR CURRENT STATE OF HEALTH SINCE RETURNING FROM THE PERSIAN GULF_____

_____

_____

_____

_____

16) HAVE YOU EVER BEEN DIAGNOSED AND/OR TREATED FOR ONE OR MORE OF THE FOLLOWING SEXUALLY TRANSMITTED DISEASES?

A) GONORRHEA _____YES _____NO

B) SYPHYLIS _____YES _____NO

C) HERPES SIMPLEX VIRUS I OR II _____YES _____NO

D) CYTOMEGALOVIRUS (CMV) _____YES _____NO

E) HUMAN IMMUNODEFICIENCY VIRUS (HIV) _____YES _____NO

F) HUMAN PAPPILOMA VIRUS (HPV) _____YES _____NO

G) HEPATITIS B OR C VIRUS _____YES _____NO

17) WERE THESE SEXUALLY TRANSMITTED DISEASES DIAGNOSED BEFORE OR AFTER SERVING IN THE GULF WAR? _____BEFORE _____AFTER _____NOT APPLICABLE

18) DO YOU HAVE BURNING, REDNESS OR PAIN AFTER CONTACT WITH YOUR SEMEN?_____YES _____NO; IF SO, HOW LONG HAS THIS BEEN OCCURRING?_____

19) DOES YOUR SEXUAL PARTNER HAVE BURNING, REDNESS OR PAIN OF HER SKIN OR VAGINA AFTER CONTACT WITH YOUR SEMEM? _____YES _____NO; IF SO, HOW LONG HAS THIS BEEN OCCURRING?_____WKS_____MOS_____YRS

20) HAS THIS OCCURRED WITH OTHER SEXUAL PARTNERS? _____YES _____NO; IF YES, HOW MANY SEXUAL PARTNERS HAVE YOU EXPERIENCED THESE SYMPTOMS WITH?_____

21) DID YOU HAVE THIS REACTION PRIOR TO GOING TO THE PERSIAN GULF? _____YES _____NO

22) DID YOU HAVE THIS REACTION WITH YOUR FIRST INTERCOURSE AFTER RETURNING FROM THE PERSIAN GULF?____YES ____NO; IF NO, HOW LONG AFTER RETURNING FROM THE PERSIAN GULF DID IT TAKE BEFORE YOU OR YOUR SEXUAL PARTNER STARTED TO EXPERIENCE THESE SYMPTOMS?

____DAYS ____WKS ____MOS ____ YRS

23) HOW SOON AFTER CONTACT WITH SEMEN DO THESE SYMPTOMS OCCUR?

(FOR FEMALE) ____MINS ____HRS ____DAYS

(FOR YOURSELF) ____MINS ____HRS ____DAYS

24) HOW LONG AFTER CONTACT WITH SEMEN DO THESE SYMPTOMS LAST?

(FOR FEMALE) ____MINS ____HRS ____ DAYS

(FOR YOURSELF) ____MINS ____HRS ____ DAYS

25) DO YOU HAVE ANY OF THE FOLLOWING SYMPTOMS AFTER CONTACT WITH YOUR SEMEN?

GENERALIZED ITCHING ____YES ____NO

HIVES ____YES ____NO

CHEST TIGHTNESS ____YES ____NO

SHORTNESS OF BREATH ____YES ____NO

COUGH ____YES ____NO

WHEEZING ____YES ____NO

DIZZINESS ____YES ____NO

FAINTNESS ____YES ____NO

COMPLETE COLLAPSE(SHOCK) ____YES ____NO

UNCONSCIOUSNESS _____YES _____NO

26) DOES USE OF A CONDOM PREVENT SYMPTOMS IN YOUR SEXUAL PARTNER? _____YES _____NO

27) HAVE YOU EVER HAD PROSTATITIS, A URINARY TRACT INFECTION OR OTHER URINARY TRACT DISORDER? _____YES _____NO

28) HAVE YOU HAD A VASECTOMY? _____YES _____NO; IF YES, WHAT YEAR?

_____

29) HAVE YOU EVER BEEN EVALUATED FOR AN INFERTILITY PROBLEM?

_____YES_____NO; IF YES, PLEASE EXPLAIN_____

_____

_____

30) DO YOU HAVE ANY PHYSICIAN DIAGNOSED HISTORY OF HAYFEVER, ASTHMA, HIVES AND/OR ECZEMA?_____YES _____NO; IF YES, PLEASE SPECIFY_____

_____

31) DO YOU HAVE ANY FOOD ALLERGIES? _____YES _____NO; IF YES, TO WHICH FOODS AND WHAT KIND OF REACTION(S) DO YOU EXPERIENCE?

_____

_____

32) DO YOU HAVE ANY DRUG ALLERGIES SUCH AS TO PENICILLIN OR SULFA DRUGS?_____YES _____NO; IF YES, PLEASE SPECIFY WHICH DRUGS, THE KIND OF REACTION(S) EXPERIENCED, AND HOW OLD YOU WERE AT THE TIME_____

33) DO YOU TAKE ANY PRESCRIPTION OR OVER THE COUNTER MEDICATIONS ON AN AS NEEDED OR REGULAR BASIS? _____YES _____NO; IF YES, PLEASE SPECIFY_____

34) DOES ANYONE IN YOUR FAMILY HAVE A HISTORY OF HAYFEVER, ASTHMA, HIVES AND/OR ECZEMA?_____

35) HAVE YOU PURSUED MEDICAL TREATMENT FOR THIS PROBLEM SINCE RETURNING FROM THE PERSIAN GULF?_____YES _____NO; IF YES, PLEASE EXPLAIN_____

36) ARE YOU CURRENTLY WITH THE SAME SEXUAL PARTNER YOU HAD PRIOR TO GOING TO THE PERSIAN GULF? _____YES _____NO; IF NO; PLEASE EXPLAIN_____

37) ARE YOU CURRENTLY HAVING REGULAR SEXUAL RELATIONS WITH YOUR SEXUAL PARTNER? _____YES _____NO

38) WOULD YOU BE WILLING TO PARTICIPATE IN A STUDY INVESTIGATING "BURNING SEMEN SYNDROME" WHICH WOULD REQUIRE A VISIT TO CINCINNATI, OHIO FOR A FEW DAYS IN THE NEXT SEVERAL MONTHS? (IF YOU ARE TRAVELING A FAR DISTANCE, FUNDS ARE AVAILABLE TO COVER

ALL TRAVEL EXPENSES) _____YES_____NO; IF NO, PLEASE EXPLAIN WHY NOT_____

_____

PLEASE USE THE SPACE BELOW AND THE BACK OF THIS QUESTIONNAIRE TO PROVIDE ANY ADDITIONAL INFORMATION THAT MAY BE RELEVANT TO YOUR PROBLEM. THANK YOU FOR ANSWERING THIS QUESTIONNAIRE. WE WILL BE CONTACTING YOU IN THE NEAR FUTURE FOR MORE INFORMATION_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

QUESTIONNAIRE FOR POSSIBLE ALLERGY TO SEMEN: FOR FEMALES

NAME:_____

ADDRESS:_____

PHONE: ( )-_____

DATE OF BIRTH:_____ **AGE:**_____

1) WERE YOU STATIONED IN THE PERSIAN GULF?_____YES_____NO; IF NO GO TO QUESTION 15; IF YES, FOR HOW LONG?_____

2) IF YES, WHERE WERE YOU STATIONED WHILE IN THE PERSIAN GULF?____

_____

3) WHAT WERE YOUR RESPONSIBILITIES OR JOBS WHILE IN THE PERSIAN GULF?_____

_____

4) WERE YOU EXPOSED TO CHEMICAL, DIESEL, PETROLEUM OR OTHER FUMES WHILE IN THE PERSIAN GULF?A._____YES B._____NO IF SO, WHICH FUMES AND FOR HOW LONG WERE YOU EXPOSED?_____

_____

5) DID YOU CONTRACT LEISHMANIASIS WHILE IN THE PERSIAN GULF?

_____YES_____NO; IF YES, HOW WAS THIS TREATED AND FOR HOW LONG?

_____

6) DID YOU HAVE CLOSE CONTACT WITH URANIUM WHILE IN THE PERSIAN GULF?_____YES _____NO; IF YES, PLEASE EXPLAIN?_____

_____

7) WERE YOU IN THE VACINITY OF SCUD MISSILE ATTACKS WHERE YOU MAY HAVE COME IN CONTACT WITH BIOLOGICAL OR CHEMICAL WARFARE AGENTS?_____YES _____NO; IF YES, PLEASE EXPLAIN?_____

_____

8) WHILE IN THE PERSIAN GULF DID YOU EVER TAKE PYRIDOSTIGMINE BROMIDE IN ANTICIPATION THAT YOU MIGHT BE EXPOSED TO CHEMICAL WARFARE AGENTS? _____YES _____NO; IF YES, HOW MANY TABLETS DID YOU TAKE OF THIS MEDICATION AND FOR HOW LONG?_____

9) DID YOU EXPERIENCE ANY SIDE EFFECTS FROM THIS MEDICATION? _____YES _____NO; IF YES, WHAT SIDE EFFECTS DID YOU EXPERIENCE AND HOW LONG DID THEY LAST?_____

_____

10) WERE YOU DIRECTLY EXPOSED TO ANY PESTICIDES WHILE IN THE PERSIAN GULF? _____YES _____ NO; IF YES, PLEASE EXPLAIN?_____

_____

11) WERE YOU VACCINATED TO ANTHRAX AND BOTULINUM TOXIN PRIOR TO GOING TO THE GULF WAR?_____YES _____NO; WHAT OTHER VACCINATIONS, IF ANY, DID YOU RECEIVE PRIOR TO GOING TO THE GULF WAR?_____

_____

12) HAVE YOU EVER BEEN EVALUATED, DIAGNOSED OR TREATED FOR POST TRAUMATIC STRESS DISORDER (PTSD) SINCE RETURNING FROM THE PERSIAN GULF?_____YES _____NO; IF YES, ARE YOU CURRENTLY RECEIVING

PSYCHOTHERAPY AND/OR MEDICATION FOR PTSD?_____YES _____NO.

IF YES, PLEASE LIST ANY MEDICATIONS YOU ARE TAKING FOR PTSD.

_____

_____

13) WERE YOU INVOLVED IN ANY DECONTAMINATION OPERATIONS AFTER THE WAR?_____YES _____NO; IF YES, PLEASE DESCRIBE YOUR INVOLVEMENT.

_____

_____

14) WHAT WAS YOUR GENERAL STATE OF HEALTH PRIOR TO GOING TO THE GULF WAR?_____

_____

15) DESCRIBE YOUR CURRENT STATE OF HEALTH._____

_____

_____

_____

_____

_____

_____

16) HAVE YOU EVER BEEN DIAGNOSED AND/OR TREATED FOR ONE OR MORE OF THE FOLLOWING SEXUALLY TRANSMITTED DISEASES?

A) GONORRHEA _____**YES** _____**NO**

B) SYPHYLIS _____**YES** _____**NO**

C) HERPES SIMPLEX VIRUS I OR II _____**YES** _____**NO**

D) CYTOMEGALOVIRUS (CMV) _____YES _____NO

E) HUMAN IMMUNODEFICIENCY VIRUS (HIV) _____YES _____NO

F) HUMAN PAPPILOMA VIRUS (HPV) _____YES _____NO

G) HEPATITIS B OR C VIRUS _____YES _____NO

17) WERE THESE SEXUALLY TRANSMITTED DISEASES DIAGNOSED BEFORE OR AFTER SERVING IN THE GULF WAR? _____BEFORE _____AFTER _____NOT APPLICABLE (GO TO QUESTION 18)

18) WERE THESE SEXUALLY TRANSMITTED DISEASES DIAGNOSED BEFORE OR AFTER YOUR SEXUAL PARTNER SERVED IN THE GULF WAR? _____BEFORE_____AFTER

19) DO YOU HAVE BURNING, REDNESS OR PAIN AFTER CONTACT WITH YOUR SEXUAL PARTNER'S SEMEN?_____YES _____NO; IF YES, HOW LONG HAS THIS BEEN OCCURRING?_____

20) HAVE YOU EXPERIENCED BURNING, REDNESS OR PAIN OF YOUR SKIN OR VAGINA AFTER CONTACT WITH SEXUAL PARTNERS OTHER THAN YOUR CURRENT PARTNER? _____YES _____NO; IF YOU HAVE ORAL SEX, DO YOU GET BURNING OR OTHER SYMTPOMS IN YOU MOUTH, THROAT OR STOMACH? _____YES_____NO_____NOT APPLICABLE

21) HOW LONG HAVE THESE SYMPTOMS BEEN OCCURRING? _____WKS _____MOS _____YRS

22) HOW MANY OTHER SEXUAL PARTNERS HAVE YOU EXPERIENCED THESE SYMPTOMS WITH? _____

23) DID YOU HAVE THESE REACTIONS PRIOR TO GOING TO THE PERSIAN

GULF?_____YES _____NO_____NOT APPLICABLE (GO TO QUESTION 24)

24) DID YOU HAVE THESE REACTIONS PRIOR TO YOUR SEXUAL PARTNER GOING TO THE PERSIAN GULF? _____YES _____NO

25) DID YOU HAVE THIS REACTION WITH YOUR FIRST INTERCOURSE AFTER RETURNING FROM THE PERSIAN GULF?____YES____NO ____NOT APPLICABLE (GO TO QUESTION 26)

26) DID YOU HAVE THIS REACTION WITH FIRST INTERCOURSE AFTER YOUR SEXUAL PARTNER RETURNED FROM THE PERSIAN GULF? ____YES ____NO

27) HOW LONG AFTER RETURNING FROM THE PERSIAN GULF DID IT TAKE BEFORE YOU STARTED TO EXPERIENCE THESE SYMPTOMS? _____DAYS _____WKS _____MOS _____ YRS_____NOT APPLICABLE (GO TO QUESTION 28)

28) HOW LONG AFTER YOUR SEXUAL PARTNER RETURNED FROM THE PERSIAN GULF DID IT TAKE BEFORE YOU STARTED TO EXPERIENCE THESE SYMPTOMS? _____DAYS_____WKS_____MOS_____YRS

29) HOW SOON AFTER CONTACT WITH SEMEN DO THESE SYMPTOMS OCCUR? _____MINS _____HRS _____DAYS

30) HOW LONG AFTER CONTACT WITH SEMEN DO THESE SYMPTOMS LAST? _____MINS _____HRS _____ DAYS

31) PRIOR TO YOUR FIRST REACTION, DID YOU HAVE A RECENT PREGNANCY, GYNECOLOGIC OPERATION OR OTHER PROCEDURE? _____YES _____NO; IF YES, PLEASE SPECIFY_____

_____

32) WHICH OF THE FOLLOWING SYMPTOMS AFTER CONTACT WITH SEMEN

DO YOU EXPERIENCE?

GENERALIZED ITCHING _____YES _____NO

HIVES _____YES _____NO

CHEST TIGHTNESS _____YES _____NO

SHORTNESS OF BREATH _____YES _____NO

COUGH _____YES _____NO

WHEEZING _____YES _____NO

DIZZINESS _____YES _____NO

FAINTNESS _____YES _____NO

COMPLETE COLLAPSE(SHOCK) _____YES _____NO

UNCONSCIOUSNESS _____YES _____NO

BURNING _____YES _____NO

VAGINAL ITCHING _____YES _____NO

VAGINAL SWELLING _____YES _____NO

BLISTERS _____YES _____NO

DEEP PAIN _____ YES _____NO

RASH OTHER THAN HIVES _____YES _____NO

OTHER REACTIONS (PLEASE DESCRIBE)_____

_____

33) DOES USE OF A CONDOM COMPLETELY PREVENT SYMPTOMS?

_____YES _____NO

34) DO YOU HAVE ANY PHYSICIAN DIAGNOSED HISTORY OF HAYFEVER, ASTHMA, HIVES AND/OR ECZEMA?_____YES _____NO; IF YES, PLEASE

SPECIFY_____

_____

35) DO YOU HAVE ANY FOOD ALLERGIES? _____YES _____NO; IF YES, WHICH FOODS AND WHAT KIND OF REACTION(S) DO YOU EXPERIENCE?_____

_____

36) DO YOU HAVE ANY DRUG ALLERGIES SUCH AS TO PENICILLIN OR SULFA DRUGS?_____YES _____NO; IF YES, PLEASE SPECIFY WHICH DRUGS, THE KIND OF REACTION(S) EXPERIENCED AND HOW OLD YOU WERE AT THE TIME THE REACTION OCCURRED_____

_____

_____

37) DO YOU HAVE RECURRENT VAGINAL YEAST INFECTIONS? _____YES ____NO; IF YES, HOW FREQUENT ARE THEY?_____

_____

38) DO YOU HAVE DIABETES?_____YES _____NO

39) HAVE YOU EVER TAKEN ORAL CONTRACEPTIVES? _____YES_____NO

40) ARE YOU CURRENTLY USING ORAL CONTRACEPTIVES?_____YES _____NO; IF YES; WHICH BRAND AND FOR HOW LONG?_____

_____

41) DO YOU TAKE ANY PRESCRIPTION OR OVER THE COUNTER MEDICATIONS ON AN AS NEEDED OR REGULAR BASIS? _____YES _____NO; IF YES, PLEASE SPECIFY_____

_____

42) DOES ANYONE IN YOUR FAMILY HAVE A HISTORY OF HAYFEVER, ASTHMA, HIVES AND/OR ECZEMA?_____

43) ARE YOU CURRENTLY WITH THE SAME SEXUAL PARTNER THAT YOU WERE WITH FIVE YEARS AGO?_____YES _____NO; IF NO; PLEASE EXPLAIN

_____

_____

44) ARE YOU CURRENTLY HAVING REGULAR SEXUAL RELATIONS WITH YOUR SEXUAL PARTNER? _____YES _____NO

45) HAVE YOU PURSUED MEDICAL TREATMENT FOR THIS PROBLEM?

_____YES _____NO; IF YES, PLEASE EXPLAIN_____

_____

_____

_____

46) WOULD YOU BE WILLING TO PARTICIPATE IN A STUDY INVESTIGATING "BURNING SEMEN SYNDROME" WHICH MAY ENTAIL COMING TO CINCINNATI, OHIO FOR A FEW DAYS IN THE NEXT SEVERAL MONTHS?(IF YOU ARE TRAVELING A FAR DISTANCE, FUNDS ARE AVAILABLE TO COVER ALL TRAVEL EXPENSES.) _____YES _____NO; IF NO, EXPLAIN WHY _____

_____

_____

PLEASE USE THE SPACE BELOW OR THE BACK OF THIS QUESTIONNAIRE TO PROVIDE ANY INFORMATION THAT MAY BE RELEVANT TO YOUR PROBLEM. THANK YOU FOR ANSWERING THIS QUESTIONNAIRE. WE WILL BE IN

CONTACT WITH YOU IN THE NEAR FUTURE TO DISCUSS FURTHER EVALUATION OF YOUR PROBLEM IF YOU ARE AGREEABLE.

Appendix III

COMBAT EXPOSURE SCALE

Please circle one answer for each item.

1. Did you ever go on combat patrols or have other very dangerous duty? (drive in convoys, in a combat zone, patrol rivers helicopter assaults, perimeter guard duty, etc.)

1	2	3	4	5
NO	1-3 TIMES	4-12 TIMES	13-50 TIMES	MORE THAN 50 TIME

2. Were you ever under enemy fire?

1	2	3	4	5
NEVER	< 1 MONTH	1-3 MONTHS	4-6 MONTHS	MORE THAN 6 MONTH

3. Were you ever surrounded by the enemy?

1	2	3	4
NO	1-2 TIMES	3-12 TIMES	MORE THAN 12 TIMES

4. What percentage of the men in your unit were killed (KIA), wounded, or missing in action (MIA)?

1	2	3	4
NO ONE	1-25%	26-50%	MORE THAN 50%

5. How often did you fire rounds at the enemy?

1	2	3	4	5
NEVER	1-2 TIMES	3-12 TIMES	13-50 TIMES	51 OR MORE

6. How often did you see someone hit be incoming or outgoing rounds? (at the moment it happened or very soon afterwards, enem or American)

1	2	3	4	5
NEVER	1-2 TIMES	3-12 TIMES	13-50 TIMES	51 OR MORE

7. How often were you in danger of being injured or killed? (i.e., pinned down, ambushed, near miss, an incident where yo thought you were not going to make it, a really close call, etc.)

1	2	3	4	5
NEVER	1-2 TIMES	3-12 TIMES	13-50 TIMES	51 OR MORE

8. Were you involved in handling dead bodies?

1	2	3	4
NO	1-2 TIMES	3-12 TIMES	MORE THAN 12 TIMES

Please answer the following questions about atrocities that you may have heard of, witnessed, or participated in during your military experience. Circle the answer that is most appropriate to your experience.

1. Torturing prisoners of war:
   (a) no experience
   (b) heard about it
   (c) witnessed it
   (d) participated in it

2. Torturing civilians:
   (a) no experience
   (b) heard about it
   (c) witnessed it
   (d) participated in it

3. Killing prisoners of war:
   (a) no experience
   (b) heard about it
   (c) witnessed it
   (d) participated in it

4. Killing civilians:
   (a) no experience
   (b) heard about it
   (c) witnessed it
   (d) participated in it

5. Mutilating corpses:
   (a) no experience
   (b) heard about it
   (c) witnessed it
   (d) participated in it

6. Killing children:
   (a) no experience
   (b) heard about it
   (c) witnessed it
   (d) participated in it

MISSISSIPPI PTSD RATING SCALE

Please circle the number that best describes how you feel about each statement.

1. In the past, I had more close friends than I have now.

01	02	03	04	05
NOT AT ALL TRUE	SLIGHTLY TRUE	SOMEWHAT TRUE	VERY TRUE	EXTREMELY TRUE

2. I do not feel guilt over things that I did in the past.

01	02	03	04	05
NEVER TRUE	RARELY TRUE	SOMETIMES TRUE	USUALLY TRUE	ALWAYS TRUE

3. If someone pushes me too far, I am likely to become violent.

01	02	03	04	05
VERY UNLIKELY	UNLIKELY	SOMEWHAT UNLIKELY	VERY LIKELY	EXTREMELY LIKELY

4. If something happens that reminds me of the past, I become very distressed and upset.

01	02	03	04	05
NEVER	RARELY	SOMETIMES	FREQUENTLY	VERY FREQUENTLY

5. The people who know me best are afraid of me.

01	02	03	04	05
NEVER TRUE	RARELY TRUE	SOMETIMES TRUE	FREQUENTLY TRUE	VERY FREQUENTLY TRUE

6. I am able to get emotionally close to others.

01	02	03	04	05
NEVER	RARELY	SOMETIMES	FREQUENTLY	VERY FREQUENTLY

7. I have nightmares of experiences in my past that really happened.

01	02	03	04	05
NEVER	RARELY	SOMETIMES	FREQUENTLY	VERY FREQUENTLY

8. When I think of some of the things I have done in the past, I wish I were dead.

01	02	03	04	05
NEVER TRUE	RARELY TRUE	SOMETIMES TRUE	FREQUENTLY TRUE	VERY FREQUENTLY TRUE

9. It seems as if I have no feelings.

01	02	03	04	05
NOT AT ALL TRUE	RARELY TRUE	SOMETIMES TRUE	FREQUENTLY TRUE	VERY FREQUENTLY TRUE

10. Lately, I have felt like killing myself.

01	02	03	04	05
NOT AT ALL TRUE	SLIGHTLY TRUE	SOMEWHAT TRUE	VERY TRUE	EXTREMELY TRUE

11. I fall asleep, stay asleep and only awaken when the alarm goes off.

01	02	03	04	05
NEVER	RARELY	SOMETIMES	FREQUENTLY	VERY FREQUENTLY

12. I wonder why I am still alive when others have died.

01	02	03	04	05
NEVER	RARELY	SOMETIMES	FREQUENTLY	VERY FREQUENTLY

13. Being in certain situations make me feel as though I am back in the past.

01	02	03	04	05
NEVER	RARELY	SOMETIMES	FREQUENTLY	VERY FREQUENTLY

14. My dreams at night are so real that I waken in a cold sweat and force myself to stay awake.

01	02	03	04	05
NEVER	RARELY	SOMETIMES	FREQUENTLY	VERY FREQUENTLY

15. I feel like I can not go on.

01	02	03	04	05
NOT AT ALL TRUE	RARELY TRUE	SOMETIMES TRUE	VERY TRUE	ALMOST ALWAYS TRUE

16. I do not laugh or cry at the same things other people do.

01	02	03	04	05
NOT AT ALL TRUE	RARELY TRUE	SOMETIMES TRUE	VERY TRUE	EXTREMELY TRUE

17. I still enjoy doing many things that I used to enjoy.

01	02	03	04	05
NEVER TRUE	RARELY TRUE	SOMETIMES TRUE	USUALLY TRUE	ALWAYS TRUE

18. Daydreams are very real and frightening.

01	02	03	04	05
NOT AT ALL TRUE	RARELY TRUE	SOMETIMES TRUE	FREQUENTLY TRUE	VERY FREQUENTLY TRUE

19. I have found it easy to keep a job.

01	02	03	04	05
NOT AT ALL TRUE	SLIGHTLY TRUE	SOMEWHAT TRUE	VERY TRUE	EXTREMELY TRUE

20. I have trouble concentrating on tasks.

01	02	03	04	05
NEVER TRUE	RARELY TRUE	SOMETIMES TRUE	FREQUENTLY TRUE	VERY FREQUENTLY TRUE

21. I have cried for no good reason.

01	02	03	04	05
NEVER	RARELY	SOMETIMES	FREQUENTLY	VERY FREQUENTLY

22. I enjoy the company of others.

01	02	03	04	05
NEVER	RARELY	SOMETIMES	FREQUENTLY	VERY FREQUENTLY

23. I am frightened by my urges.

01	02	03	04	05
NEVER	RARELY	SOMETIMES	FREQUENTLY	VERY FREQUENTLY

24. I fall asleep easily at night.

01	02	03	04	05
NEVER	RARELY	SOMETIMES	FREQUENTLY	VERY FREQUENTLY

25. Unexpected noises make me jump.

01	02	03	04	05
NEVER	RARELY	SOMETIMES	FREQUENTLY	VERY FREQUENTLY

26. No one understands how I feel, not even my family.

01	02	03	04	05
NOT AT ALL TRUE	RARELY TRUE	SOMEWHAT TRUE	VERY TRUE	EXTREMELY TRUE

27. I am an easy-going, even-tempered person.

01	02	03	04	05
NEVER	RARELY	SOMETIMES	USUALLY	VERY MUCH SO

28. I feel there are certain things that I have done that I can never tell anyone, because no one would ever understand.

01	02	03	04	05
NOT AT ALL TRUE	SLIGHTLY TRUE	SOMEWHAT TRUE	TRUE	VERY TRUE

29. There have been times when I used alcohol (or other drugs) to help me sleep or to make me forget about things that happened in the past.

01	02	03	04	05
NEVER	INFREQUENTLY	SOMETIMES	FREQUENTLY	VERY FREQUENTLY

30. I feel comfortable when I am in a crowd.

01	02	03	04	05
NEVER	RARELY	SOMETIMES	USUALLY	ALWAYS

31. I lose my cool and explode over minor everyday things.

01	02	03	04	05
NEVER	RARELY	SOMETIMES	FREQUENTLY	VERY FREQUENTLY

32. I am afraid to go to sleep at night.

01	02	03	04	05
NEVER	RARELY	SOMETIMES	FREQUENTLY	ALMOST ALWAYS

33. I try to stay away from anything that will remind me of things which happened in my past.

01	02	03	04	05
NEVER	RARELY	SOMETIMES	FREQUENTLY	ALMOST ALWAYS

34. My memory is as good as it ever was.

01	02	03	04	05
NOT AT ALL TRUE	RARELY TRUE	SOMETIMES TRUE	USUALLY TRUE	ALMOST ALWAYS TRUE

35. I have a hard time expressing my feelings, even to the people I care about.

01	02	03	04	05
NOT AT ALL TRUE	RARELY TRUE	SOMETIMES TRUE	FREQUENTLY TRUE	ALMOST ALWAYS TRUE

36. At times I suddenly act or feel as though something that happened in the past were happening all over again.

01	02	03	04	05
NOT AT ALL TRUE	RARELY TRUE	SOMETIMES TRUE	FREQUENTLY TRUE	ALMOST ALWAYS TRUE

37. I am unable to remember some important things that happened in the past.

01	02	03	04	05
NOT AT ALL TRUE	RARELY TRUE	SOMETIMES TRUE	USUALLY TRUE	ALMOST ALWAYS TRUE

38. I feel "super alert" or "on guard" much of the time.

01	02	03	04	05
NOT AT ALL TRUE	RARELY TRUE	SOMETIMES TRUE	FREQUENTLY TRUE	ALMOST ALWAYS TRUE

39. If something happens that reminds me of the past, I get so anxious or panicky that my heart pounds hard; I have trouble getting my breath, I sweat, tremble or shake; or feel dizzy, tingly, or faint.

01	02	03	04	05
NEVER	RARELY	SOMETIMES	FREQUENTLY	VERY FREQUENTLY

Appendix IV

Male (Semen Cultures)

Candida - Culture and KOH prep
Gardinerella - KOH prep/wet mount
Trichomonas - KOH prep/wet mount
Chlamydia - viral transport medium
Mycoplasma - mycoplasma medium
Gonorrhea - chocolate agar plate
HSV I and II - viral transport medium
CMV - viral transport medium

Female (Vaginal/Cervical Cultures)

Pap smear
Candida - Culture and KOH prep
Gardinerella - KOH prep/wet mount
Trichomonas - KOH prep/wet mount
Chlamydia - viral transport medium
Mycoplasma - Mycoplasma medium
Gonorrhea - chocolate agar plate
HPV - DNA probe B211
HSV I and II - viral transport medium
CMV - viral transport medium

Serologic Assessment (both Male and Female)

CBC with differential
Renal, bone, liver panels
ANA
TSH
C_3, C_4
WSR
Urinalysis
Routine Urine Culture
RPR
HSV I & II
CMV
HIV

Male only

PSA (prostate specific antigen)